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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



FEBRUARY 2, 1935

Fantasy in Crystal
See Page 72

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The Weekly  Summary of

Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

A method of cutting ice by water under high pressure is being tried in the port of Leningrad.

Germany has restricted the number of physicians, but still considers that the country has too many doctors.

Jars and chests containing wheat stored over a thousand years ago have been found in excavation of a Tartar city of the tenth century.

New Hampshire leads the states in the battle against pullorum, a poultry disease so virulent that it can wipe out a hatch of chicks almost overnight.

Tuberculosis is rated one of the most costly diseases because of the long treatment needed and because of the loss in income during the illness.

Still fighting the Dutch elm disease, the United States has barred from entry into this country all elm logs from Europe, such as are used in furniture veneer.

Because bakers in the Netherlands are not allowed to work late at night, fresh bread for breakfast is a problem; but freezing bread with "dry ice" for several days is being tried and is said to keep the bread as fresh-tasting as if from the oven.

A school of agriculture is to be established at the Hebrew University in Jerusalem.

A diamond-pointed "finger," which detects roughness, is a new piece of apparatus of use in testing smoothness of work on automobile cylinder repairs.

A specimen of the saguaro cactus from Arizona sent to the Missouri Botanical Garden weighed over a thousand pounds.

In prehistoric America, the Aztec poet-king Netzahualcoyotl, living near Mexico City, wrote a verse about "smoke in your eyes."

The baboon understands the advantages of mass attack and defense best of any mammal other than man, says Dr. A. E. Hooton, Harvard anthropologist.

In a Scythian cemetery of about 200 B.C., in the Caucasus, archaeologists have unearthed dishes made by Greek artisans and stamped by Greek customs officials.

Plans for a new building of the Brooklyn Children's Museum call for a roof deck where the children can study stars at night and engage in science projects in summer.

WITH THE SCIENCES THIS WEEK

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ARCHAEOLOGY

Texas River Terrace Yields Clues to Ancient Americans

Abundance of Stone Artifacts Found Eighteen Feet Beneath Surface Indicates Long Occupancy of Site

SCIENTISTS can add ten thousand years to the age of man in America. Man-made weapons, buried eighteen feet underground, have been unearthed near Austin, Texas, by Prof. J. E. Pearce, anthropologist of the University of Texas, and are hailed as convincing evidence that North America had inhabitants far earlier than archaeologists now concede.

The first discovery was witnessed by Dr. E. H. Sellards, professor of geology at the University, who has studied the geologic formation of the site and pronounces the discovery "highly significant in the early history of man in this part of the world."

The objects consist of flint dart points and slivers from flint workshops scattered in quantities through various strata of old Brushy River terrace, near Round Rock, Texas. At some levels old hearths and kitchen refuse have been found.

The significance of the discovery is that the time scale of America's vague prehistory must be stretched to a great length, like an elastic band. For if the river terrace flints are as old as the geology proclaims them to be, they are still not so old in type as some other Texas relics of man. Hence, the older relics must be given a new status, as having a much greater antiquity than has heretofore been assigned them.

"The find is of the first order of importance," says the geologist, "in that it clearly demonstrates the fact that man was living here, not sparsely, but in numbers, during the time when our broad valleys were being carved and filled by normal stream action."

Referring to scientific doubts and arguments over many reported discoveries of early Americans, Prof. Sellards commented:

"One beautiful feature of the situation lies in the abundance and unmistakable character of the archaeological materials. A few minutes digging at the right place brings to light chips and artifacts to such effect as to settle at

once all doubts as to the archaeological facts.

"Formerly it was supposed that man first appeared in North America from 8,000 to 10,000 years ago. The recent discovery at Round Rock by Mr. Pearce and similar discoveries elsewhere are tending to place the time of the appearance of man on this continent from 10,000 to 20,000 years earlier."

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METEOROLOGY

Air Mass From Yukon Caused Snow in Dixie

SNOWFLAKES falling on palmettos and cypresses around New Orleans, four inches of snow at Memphis, with a like white blanket over a wide section of the South, constituted the only really unusual feature of the cold wave that swept over the country. Otherwise it was a quite ordinary cold wave, U. S. Weather Bureau meteorologists informed Science Service.

The snowfall was due, it was explained, to the impact of a large cold air mass migrating from the Yukon country southeastward into the middle Mississippi valley, and there encountering air of relatively high temperatures laden with a high percentage of moisture.

The heavy snow will be of real benefit in at least one part of the country. For many months there has been a most anomalous drought area, extending from eastern Ohio southward into Tennessee. This is a mixed-farming region, with winter wheat as perhaps the chief grain crop. The long drought had left it in quite unsatisfactory condition, and lack of snow was exposing it to freezing and possible "heaving." Now the snow gives it protection against cold injury, and its eventual melting will at least partially relieve the drought.

Chill championship honors for the cold wave are shared by Yellowstone Park, Wyo., Havre, Mont., and Devils Lake, N. D., each showing a low-temperature record of 32 degrees below zero. But the best American "cold spots" seemed warm compared with what western Canada was able to do. At Prince Albert a temperature of minus 52 was recorded, and at Battleford the lowest thermometer reading was 54 degrees below zero.

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Man is the only "cry baby" known in the animal kingdom, says one anthropologist.



WHERE MODERN AMERICANS SEEK FORERUNNERS

Eighteen feet beneath the upper ground level of this terrace, Prof. J. E. Pearce of the University of Texas has found artifacts of ancient man. Inset: Dr. E. H. Sellards, geologist, who pronounces the site "highly significant."

ELECTRICAL ENGINEERING

New Transmission System Permits Wide D-C Use

Short Circuit Causes Drop in Power Instead of Increase; Makes Nation-Wide Network of Lines Possible

A NEW system of direct current electric power transmission which may overthrow present alternating current methods was presented before the New York meeting of the American Institute of Electrical Engineers.

The new system, described by B. D. Bedford and Dr. F. R. Elder of the General Electric Co. and Prof. C. H. Willis of Princeton University, has possible ramifications—although not mentioned officially at the meeting—in the field of government generation and transmission of power such as T.V.A. and the use of great direct current generators as are foreshadowed by the 10,000,000 volt apparatus of Prof. Robert Van de Graaff of the Massachusetts Institute of Technology.

Radical Changes Forecast

So highly is the system regarded in some electrical circles that the editor of the *Electrical World* remarked, "Engineers have only themselves to blame if they miss hearing why direct current transmission is just about to crowd the heels of present transmission practice."

Biggest drawback of direct current power transmission systems in the past, and one of the major reasons why today most systems use alternating current, was the danger of flashing sparks of miniature lightning whenever the d-c system short-circuited. This obstacle, it is claimed, has now been overcome.

The new system is so arranged that when the short circuit occurs power in the circuit decreases instead of increasing. Thus the greatest handicap of d-c transmission in its competitive battle with a-c is overcome. Once the problem of high current short circuits in d-c systems is conquered electrical engineers can take advantage of the long-known benefits of this type of system.

One advantage is that a number of generators can be fed into a single transmission line at different places. With present a-c systems this is possible but a problem of great technical difficulty, for each generator station must be in step, or synchronized, with all the

others. With d-c systems all talk of phase relations and such technical subjects is removed.

The picture envisioned by the new system includes great, nationwide power lines fed at intervals by either steam or hydroelectric plants. Power networks could be strung out indefinitely.

Giant Vacuum Tubes

In experimental installations at Schenectady direct current of 15,000 volts was obtained from alternating current lines by the use of phanotron and thyatron tubes. These giant vacuum tubes turned the incoming power supplied to the buildings at 13,800 volt, sixty cycle, three-phase, alternating current, into d-c at 15,000 volts and 200 amperes.

After being transmitted through 15,000 feet of underground test conductor the d-c was turned back into the alternating current line with the necessary characteristics. Complete control by the operator was effected at all times.

Among demonstrations showing that short-circuits are not serious in the new system, the electrical engineers tried to create an arc across one of the large insulators used on 11,000 volt transmission lines by short-circuiting it with a small wire. The voltage on the line fell almost to zero but the current remained constant. When the short-circuit was removed the voltage returned rapidly to its full rating and the current was still constant. The experiment with short-circuiting insulators is similar to that encountered when lightning strikes a high-powered transmission line.

The tests indicate that overhead lines can be built with fewer insulators than is now required for a-c transmission, because, while there may be an arc over during a lightning strike, the dynamic current of the system is limited and the arc will extinguish itself. Each insulator on such a system therefore becomes a lightning arrester to clear the line of any high-voltage transient currents.

A new type of electric motor which scientists hail as revolutionary was described before the meeting by the

world-famous Swedish-born electrical engineer, Dr. E. F. W. Alexanderson, who is consultant for the General Electric Co.

Here is what makes Dr. Alexanderson's new motor revolutionary:

1. It can be "plugged in" right across the leads of a 2,300 volt circuit and start gently and easily and not burn up.

2. It uses electron tubes to turn alternating current into direct current, so that the motor, although it runs off a-c, has the characteristics of a variable speed d-c motor.

3. Instead of being started with a special resistance device for controlling the current supplied to it, the new motor can start from the beginning at "full throttle." The starting of the motor can thus be made entirely automatic from a remote point miles away if desired.

In describing the new application of electron tubes to the field of electric motors Dr. Alexanderson, in his paper presented with A. H. Mittag, of General Electric Co., told how the thyatron tubes employed take the place of the commutator in the usual motor.

A commutator, Dr. Alexanderson indicated, consists of the copper segments at the end of the rotating part of an electric motor. Brushes, usually of carbon, bear against it and pass current through the rotor in the proper way. The make and break of such arrangement finally leads to sparking at the brushes, which requires a cleaning of the commutator and a reshaping of the brushes. With the electron tube commutator device such hindrances are avoided.

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MEDICINE

Thunderstorms Vitate Asthma Treatment

THUNDERSTORMS and asthma have baffled a group of scientists at the University of Illinois Medical College, Chicago.

These investigators, Drs. Tell Nelson, B. Z. Rappaport, William H. Welker and A. G. Canar, know they can relieve asthma sufferers by putting them in an air-conditioned ward or room, but they are up against a blank wall as to why the thunderstorm sets the patients back. Some factor other than pollen, temperature, humidity and ozone must play a part in bringing on asthma attacks, they believe.

For several seasons they have carried on investigations of the effect of both filtered air and air-conditioning on asthma.

Filtering out the offending pollens helps the asthma sufferers materially, they found. Keeping the humidity low and the temperature relatively constant helps even more, they have reported to the American Gas Association. But even patients who were free of symptoms developed attacks of asthma while in the air-conditioned ward shortly after a severe thunderstorm. Patients in the air-conditioned ward, however, suffered less severe attacks after the thunderstorm and recovered more quickly than patients who had been in a room with filtered but not conditioned air.

The effects of barometric changes and ionization in relation to thunderstorm-induced attacks have not yet been studied, the investigators state.

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MEDICINE

News !! Afternoon Tea Denounced in Britain

AFTERNOON tea, dear to the heart of every true Britisher, has been denounced by two British physicians who find it "difficult to imagine why tea should be such a popular meal."

The two who dare to utter such seeming heresy are Drs. W. C. D. Maile and K. J. L. Scott, honorary physicians to the Woking Victoria Hospital. (*Lancet*, Jan. 5.) They base their un-British opinion on scientific studies of the length of time food consumed at various meals remains in the stomach.

An ordinary meal remains in the stomach from 3½ to 4½ hours, they found by X-ray observations.

"With breakfast at 8:30 A. M., the stomach is likely to be empty at 12:30 P. M., so that lunch at 1 P. M. is reasonable enough," they state.

"But after lunch at 1:30 to 2 P. M. the stomach cannot possibly be empty till 5:30 to 6 P. M., so that tea at 4:30 can only be justified on the grounds of a pleasing interlude. Actually on the grounds of suitable feeding, it would be better to leave out tea and take dinner at 6 or 6:30 P. M. The stomach would then have a little rest before both lunch and dinner, and would be ready to deal with the evening meal, which in the ordinary way would be disposed of by 10:30 to 11 P. M."

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MEDICINE

Alum Treatment Makes Mice Resistant to Encephalitis

Study Suggests New Way to Protect Against This and Similar Diseases

A NEW WAY of getting protection against infantile paralysis, encephalitis and similar diseases which invade the body through the lining membranes of the nose may result from studies just reported by Dr. Charles Armstrong of the U. S. Public Health Service's National Institute of Health, Washington, D. C.

It was in the course of these studies that Dr. Armstrong himself recently suffered an attack of encephalitis as a result of working with the infective virus for many months.

A three per cent. solution of sodium alum dropped once a week into the nostrils of white mice enabled these animals to resist nasal infection with the virus of encephalitis from the epidemic in St. Louis in 1933, Dr. Armstrong found. This was because sodium alum of just that strength provided the right degree of irritation to make the nasal mucous membrane resistant to the encephalitis virus. Other strengths of sodium alum and other solutions, such as salt and sugar, were not as satisfactory, he found.

Had Unexpected Effect

In the beginning of his investigation, Dr. Armstrong gave the mice weekly doses of the alum solution for several weeks before giving an infective dose of encephalitis virus. He thought that perhaps "such astringent or mildly irritating treatment, if applied in the face of an epidemic or in the presence of the virus, might enhance susceptibility to infection."

Further investigation, however, showed that dropping the solution into the animals' nostrils just before or soon after the infective dose did not increase their susceptibility to infection but might even lessen it. This point may be of significance in developing the method to give protection during epidemics.

Dr. Armstrong's work has not yet been given practical application, but reading between the lines of his conservative, scientific conclusions, it ap-

pears that he believes it may pave the way for this in the future.

"The experimental work here recorded," he stated, "therefore suggests lines of study which may possibly lead to the development of procedures of practical value in preventing infections contracted by way of the nasal mucous membranes."

Since not only encephalitis but the much-dreaded infantile paralysis is among the diseases that enter the body through the nasal membranes, Dr. Armstrong's research, if it develops practical value, will be of tremendous importance in man's fight against disease.

Dr. Armstrong's latest research started from observations by himself and a number of other medical scientists, that different substances could modify the local reaction to invading disease "germs" and viruses. That the effect is purely a local one was shown by the fact that mice that had had the nasal alum treatment were not able to resist the infective virus when it was injected into the brain instead of being introduced via the nostrils.

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BIOLOGY

Eat Less, Live Longer, Experiments Indicate

SUPPORT for the old adage, "We dig our graves with our teeth," has been found in experiments by Lester Ingles, graduate student at Brown University. Working under the direction of Prof. A. M. Banta, Mr. Ingles found that jars of the little aquatic animal *Daphnia* given short supplies of food lived on the average 50 per cent. longer than did similar colonies kept well fed. Dr. Banta's explanation was that these animals, thus forced into abstemiousness, burned their life-fires lower, produced and used less energy, and consequently did not "wear out" so soon.

Science News Letter, February 2, 1935

PSYCHOLOGY

Girls Fight, Too

Study of Pre-school Children Shows That Neither Sex Should be Called the Gentler One; Girls Cry More

By MARJORIE VAN de WATER

YOUNG Joe Mulligan is a "scrapper."

When he comes home from the warpath with his round blue-eyed face blackened and blood-marred but wearing a triumphant smile that like as not reveals the place of a missing tooth, his patient ma sighs with resignation and pa chuckles indulgently.

"Boys will be boys," is the consensus of opinion in the family. They console themselves with the theory that all boys fight—it's just something they have to go through, like measles.

But just let them catch Joe's sister Molly picking a fight with the little girl next door, flying at her with vicious young teeth and fists and kicking feet! They'll teach her, all right! Just imagine a girl behaving like that! Girls don't fight!

That boys are naturally fighters and their sisters are peace-loving is something that "everybody" takes for granted, but as is often the case "everybody" is wrong.

The little Mollies go into battle just as often as do the Joes. At least until they are old enough to have had it drilled into them that girls just do not fight.

This was revealed by a scientific study of children's quarrels and fights in which a total of over two thousand battles between youngsters ranging in age from two to four years were watched with impartial detachment by Dr. Arthur T. Jersild, of the Child Development Institute, Teachers College, Columbia University, and an associate, Miss Frances V. Markey.

Dr. Jersild is a great friend of the small boys and girls of this age who are in the pre-school either at the Child Development Institute or at a day nursery. Recently he wanted to find out what these little ones wish for, what they dream about, what they long for, and what they fear. He made friends with them, one by one, gained their confidence, and persuaded them each to tell him, as they would talk to Santa Claus, just what was in their hearts and minds.

After that achievement, it was not difficult for him to be able to watch them and find out when they fight, how often, what for, and with what weapons.

Different children vary enormously in pugnacity, he observed. At one extreme was a child who took the warpath no less than 70 times during the period of observation. At the other was a youngster who was the aggressor only three times.

At one extreme was a gentle baby who never hit, or pushed, or pinched, or showed any other sign of personal attack or defense. Another little warrior had a record of 87 such acts of violence.

Of course, all the youngsters were involved in conflict sooner or later, either as the aggressor or as the defender. But the number of separate conflicts in which they were involved ranged all the way from 17 to 141.

These were true individual differences; they did not represent any natural variation between the sexes. No indication was found that either sex deserves to be known as the "gentler."

Was there a difference in the man-

ner of their fighting? The answer is possibly yes to this question. After the age of three, the girls were observed to scream and cry somewhat more than the boys, and the boys were seen to hit and snatch somewhat more frequently than did the little girls.

Since at that early age, girls are superior to boys in their use of language, the psychologists rather expected to find that this would be another difference that would crop out in their conflicts. You might expect Molly, with her greater command of her tongue, to stand off and scold, while Joe would just smack the offender without previous exchange of words.

It didn't work out that way, however, neither the girls nor the boys showed any greater use of language during disputes.

The next question to interest the psychologists was the matter of conflict between the sexes. For many years, the world has been troubled by antagonism between the sexes, resulting in discrimination against the other sex or accusations of discrimination; in varying wage scales for men and women; in women's rights movements; in the exclusion of women from men's clubs and vice versa; and in brother-and-sister feuds. It has seemed natural to adults that the little boys should pull the curls of the little girls and that the little girls should stick out juvenile tongues at the little boys.

Yet here again, the small pre-school



YA-A-A-A! TRY AND GET IT!

Please note the expression on the little girl's face. Wouldn't you say that it was exasperating?

fighters provided a surprise for the psychologists. Actually there were more fights between a boy and a boy, or between a girl and a girl, than between a boy and a girl.

Does the explanation lie in the chivalry of the "little gentlemen?" Is the boy so gentlemanly and the girl so lady-like that the fight between them evaporates into chivalrous etiquette?

The answer is given by the facts as listed by Dr. Jersild.

"Boys, when fighting with boys, hit oftener than fighting with girls.

"Girls, when fighting with girls, use more language than when fighting with boys.

"A boy is relatively more often the aggressor in fights with girls than in fights with other boys.

"A girl, when fighting with a girl, will hit less often than will a boy when fighting with a boy.

"A girl, when fighting with a boy, screams and weeps more often than does a boy when fighting with either a boy or a girl."

But if males in the kindergarten must forfeit the right to the title of fighting sex, and if the much talked-of sex conflict is absent from this particular battle-ground, at least one big difference was found between groups of children in their tendency to battle. That is between the children of the poor and those in more fortunate circumstances.

Altogether three groups of children were included in the investigation. Two were in private nursery schools and came from homes of relatively well-to-do families. The third group were children in a nearby day nursery which was supported mostly by charity.

The day nursery bunch were the fighters, and outstandingly so. They averaged more than twice as many conflicts for each child as in the nursery school group nearest to them in age.

Not only were the fights more numerous; they were also more vigorous.

It is true that the nursery school group that were so relatively peaceful had more play space and better play equipment than did their battling neighbors. But this did not seem to explain anything, for when the peaceful group did go to war, it was usually over some toy or play device.

The others seemed to battle more for the sheer love of conflict. They did more hitting than snatching. They attacked one another's persons more than one another's materials. And there were a great number of battles in which no material issue seemed to be involved. They were just out for a fight.



THE OFFENSIVE

Little sister can pick a fight as well as brother. He is more likely to hit when he is fighting with a boy than when the battle is with a girl.

The fighting talk of the day nursery bunch was reported by the psychologists as "more virile" than that of the children in more fortunate economic circumstances. They used more obscene language. And their chosen means of insult to each other was likely to be much more offensive to the esthetic sense of their elders.

Although the number of children was too small to make it possible to draw any sweeping conclusions, it was observed that within these rather small groups that the different nationalities showed varying tendencies to battle.

The day nursery group—the fighters—included North Europeans and Mediterraneans, and within this group the Mediterraneans showed a decidedly greater tendency to fight.

In the other group in the nursery schools, there were Nordics and Jews. Here the Jews were slightly less likely to fight than were the Nordics.

It would seem that children of Spanish, Italian, and Greek parentage do more fighting than children whose parents come originally from Northern European countries. Dr. Jersild unfortunately does not give us any figures for the "fighting Irish."

In watching and recording these thousands of playground quarrels and fights, Dr. Jersild and Miss Markey did not watch the children alone. The old saying has it that it takes two to make a quarrel. But the psychologists found

that in most cases when the quarrel is in a school, there is soon a third person involved—that is the teacher.

Although all these schools were progressive schools where the children are supposed to be allowed to solve their own problems, and learn from their own experience, yet in over a third of all the children's conflicts, the teacher interfered. She would step into the fray and either arbitrarily put an end to a fight or, if the fight had already ended, she might reverse the decision and give the defeated child the final victory.

The kindergarten, or the nursery, has its own Battling Bobs who fight more often than anyone else. And this fighting child is the one who most often takes the aggressive, hits more often, and more often wins his fights than does the child who fights but little.

Still, in spite of this, Dr. Jersild found no child cock-of-the-walk who feels free to attack everyone and who is immune from attacks from others. Neither did he find any put-upon cry-baby who is the object of attack from everyone else and who never takes the warpath on his own behalf. In Dr. Jersild's words:

"Everyone seems, at one time or another, to take a crack at everyone else."

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Science News Letter, February 2, 1935

PUBLIC HEALTH

Cold Wave May Prolong Influenza Outbreak

MORE influenza cases are being reported each week to the U. S. Public Health Service, and in the presence of the recent widespread cold wave health officials do not see any prospect for an early falling off in cases of this disease.

For the latest week on which figures are available, about 8,000 new cases were reported. This is an increase of some fifteen hundred over the previous week. Because so many cases of influenza are not reported, the actual number in the country is probably five or more times the reported number, health officials point out. Increases were reported from widely separated states, indicating that the present outbreak is nationwide.

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MEDICINE

Finds Certain Substances Reach Brain via Blood

FINDINGS suggesting that a way may be found to protect the brain from harmful substances, such as lead, which when it reaches the brain causes the most serious form of lead poisoning, were reported by Dr. Ulrich Friedemann of the Rockefeller Foundation to the Yale Medical Society.

The brain receives various materials directly from the blood capillaries rather than by way of the spinal fluid, as hitherto has been supposed, Dr. Friedemann announced.

These tiny blood vessels bring the brain its nourishment, scientists know, while the spinal fluid has been considered something in the nature of the drainage and water supply system of the brain. How chemical poisons and disease-causing viruses reach the brain is not definitely known in all cases. The virus of infantile paralysis, for example, is now thought to reach the brain by way of the nerves. Lead probably gets there by way of the blood vessels. Dr. Friedemann's discoveries give scientists more building-stones with which to construct knowledge of this problem in brain injury.

Electro-positive substances pass through the walls of the tiny blood capillaries more readily than electro-negative substances, irrespective of the chem-

ical constitution of the substances or the size of their particles, Dr. Friedemann found.

This supports the view that the tetanus toxin, which causes lockjaw, reaches the brain through the nerves rather than through the blood vessels, since the tetanus toxin is electro-negative, and therefore does not pass through blood vessel walls readily if at all.

Injections of adrenalin and of pituitary gland extract increase the ease with which substances pass through the capillary walls, Dr. Friedemann said.

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ASTRONOMY—PHYSICS

Exploding Stars Suggested As Cosmic Ray Sources

EXPLODING stars as the birthplace of the powerful cosmic rays are suggested by Prof. Werner Kolhoerster's researches reported from Germany.

It is not a new idea, but scientists hot on the trail of the cosmic ray mystery are greatly interested in his report just published in Berlin that more cosmic rays come from the spectacular erupting star in the constellation of Hercules than from the rest of the sky.

Dr. Fritz Zwicky, of the California Institute of Technology, a few months ago put forth the idea that cosmic rays are let loose when a gigantic stellar explosion occurs, but he has felt that even the new Hercules nova, seen since December as a brilliant star near Vega, was too feeble to give many cosmic rays.

Prof. Kolhoerster, who is a pioneer cosmic ray investigator, has found that when he pointed his cosmic ray counters directly at Nova Herculis during its recent eruption the cosmic ray intensity increased as the star grew brighter and brighter. An article published in the *Berliner Tageblatt* states the cosmic ray intensity increased from one to two per cent. as he sighted his cosmic ray "telescope" at the star.

Hitherto observers have found no increase in ray intensity as they pointed their instruments at the sun or other stars in the sky; a finding which has led to the belief that cosmic rays come from interstellar space.

Prof. Kolhoerster's discovery, if confirmed, suggests that these past researches were not timed properly; that the special nova type star is the one which needs watching.

Science News Letter, February 2, 1935

IN SCIENCE

SEISMOLOGY

North Pacific Bottom Shaken by Earthquake

THE UNEASY sea bottom off the Aleutian islands, one of the most active earthquake regions of the world, took another shaking early on Wednesday morning, Jan. 23, when at 2:24.1 a. m., eastern standard time, a severe quake took place. Seismologists of the U. S. Coast and Geodetic Survey, working with data obtained telegraphically through Science Service, gave the epicenter location as latitude 51 degrees north, longitude 168 degrees west. This is approximately 130 miles south of Unalaska island.

Stations reporting to Science Service were those of the Dominion Observatory, Ottawa, Canada; Seismological Observatory, Pasadena, Calif.; the University of California, Berkeley, Calif.; University of Montana, Bozeman, Mont.; Georgetown University, Washington, D. C.; Canisius College, Buffalo, N. Y.; and the observatories of the U. S. Coast and Geodetic Survey at Ukiah, Calif., Tucson, Ariz., and Chicago.

Science News Letter, February 2, 1935

METEOROLOGY

Products of Winter Rain Rival Cave Stalagmites

See Front Cover

FAIRYLAND lovelinesses in crystal, rivaling the stalagmites of limestone caverns in fantastic form and gleaming whiteness, are likely to greet our eyes on any morning when winter hesitates between thawing and freezing, and a rain falls that solidifies into ice wherever it strikes a solid object. Not only are trees thus glorified, but also the humblest grasses and the small wiry shrubs that lift themselves scarcely higher. Evanescent, though, this beauty is: it seems a pity that the sun, whose light is needed to give us the full benefit of this glittering glory, should at the same time be darting arrows of warmth to take it all away.

Science News Letter, February 2, 1935

IN FIELDS

CHEMISTRY

Synthetic Rubber, Positron, Win Gold Medal Awards

DISCOVERIES of synthetic rubber and a new fundamental unit of matter won the two gold medals of the American Institute to be presented Feb. 7 to Rev. Julius A. Nieuwland of Notre Dame University and Dr. Carl D. Anderson of California Institute of Technology.

Promising to compete in price with natural rubber and superior for some special uses, Father Nieuwland's synthetic rubber, chemically produced from acetylene, was developed by du Pont chemists and marketed under the name Duprene.

The positron discovered by Dr. Anderson, one of Dr. R. A. Millikan's associates, is the positive electron. It is considered one of the three fundamental entities of the universe. Its discovery toppled the old idea that protons and negative electrons alone are the ultimate stuff of atoms.

Dr. Anderson is not yet 30 and one of the youngest American science leaders. Father Nieuwland, Belgian born, graduated from Notre Dame, studied chemistry at Catholic University and while there did some of the research that led to lewisite, deadly but unused American war gas.

Science News Letter, February 2, 1935

ZOOLOGY

Lemur's Tooth Comb Joins "Ain't So" Club

SCIENCE has taken from the lowly lemur, way-back ancestor of man, his only other claim to notice. This is his "built-in" comb for dressing his fur.

The comb is really his lower front "buck" teeth. They jut out almost horizontally. Each tooth, moreover, is serrated into prongs like those of a fork, the resemblance to a real comb being therefore striking. In fact, scientists could never see any other use for this strange instrument, although they did wonder at the apparent flippancy of Nature in providing it.

There was even a built-in "tooth brush" in the lemur's mouth. This was the under side of the tongue, with which the animal was thought to clean away the hair collected by the "comb" during the grooming.

But now M. Russell Stein, Columbia University anthropologist, watching affairs at the Bronx Zoo, finds that the lemur rarely primps. When he does, it is generally with his claws.

Nor could the creature comb himself with his teeth, even though he might wish, it was seen. The prongs are so close together that dental floss cannot be forced through them.

Back home in Madagascar, the comb-myth about the lemur is blasted too. In his native habitat, the front buck teeth are merely used to shred edible morsels of green bark from branches.

Science News Letter, February 2, 1935

ENGINEERING

Obsolete Roads Demand Replacement

LACK of planning in the past finds the United States with the greatest system of roads of any nation in the world but roads for the most part now obsolete.

This is the theme of the annual report to the American Road Builders' Association by its president, Capt. H. C. Whitehurst.

The unforeseen and unnoted increases in the volume of motor travel and the great increase in road speeds by motor vehicles now bring the nation to the place where inadequate and wornout highways must be replaced, said Capt. Whitehurst who is director of highways for the District of Columbia.

If for no other reason, Capt. Whitehurst indicated, the modernization of highways must come to cut down the growing death and injury toll of traffic. Tracing the growth of the highways, he said:

"In the early days of the automobile the sudden demand for highways resulted in improving surfaces on old locations which have since become inadequate. Most of our large metropolitan areas are further faced with the problem of building or improving arterial highways and eliminating grade crossings. And sooner or later we must construct national highways, transcontinental from east to west and from north to south."

Science News Letter, February 2, 1935

RADIO

Electrons in "Mobs" Set Radio Limits

THE ALMOST moblike characteristics of the particles of electricity flowing through a radio set is what sets the ultimate limit to which engineers can push amplification of faint radio signals in their search for more and more distant reception, Dr. J. B. Johnson and Dr. B. F. Llewellyn of the Bell Telephone Laboratories told the meeting of the American Institute of Electrical Engineers in New York.

The rushing about of the electrons in a radio circuit, wherein they batter one another and the wire through which they pass, makes a tiny noise which radio amplification makes louder and louder until finally it may screen out some faint signal.

This noise in a radio set, limiting amplification, is caused by the thermal agitation of the electrons. There is nothing engineers can do about it unless one tried to operate the radio set in a bath of liquid air which, because of its low temperature of hundreds of degrees below zero, would reduce the thermal rushing characteristics of the electrons. This procedure is not practical.

Science News Letter, February 2, 1935

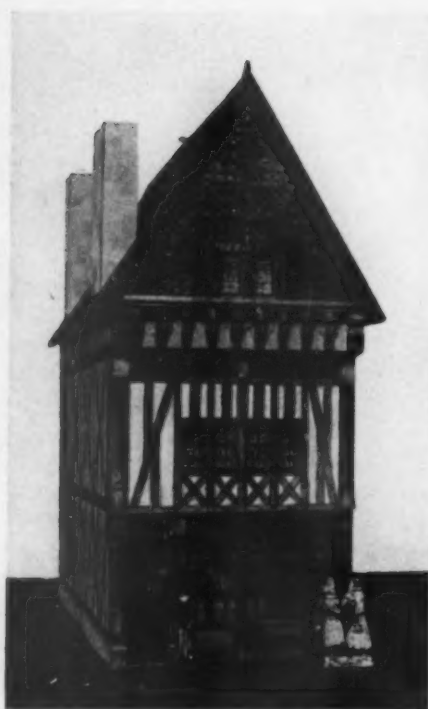
GENERAL SCIENCE

Smith College Granted Chapter of Sigma Xi

THE distinction of being the first woman's college to be admitted to the ranks of Sigma Xi, scientific honor society, has been won by Smith College, Northampton, Mass. The establishment of a chapter there marks the breaking of a deep-rooted tradition on the part of the organization.

The petition of the college to have a chapter established on its campus was granted after five years of persistent effort on the part of the science faculty, led by Dr. Howard W. Meyerhoff, professor of geology, and President William Allan Neilson. Reports of a committee of the society which visited Northampton and inspected the equipment and work of the science departments at Smith College were so enthusiastic that the petition for a chapter was unanimously granted at the last meeting of the society.

Science News Letter, February 2, 1935



IN MEDIEVAL FRANCE

Ornate without, this house was rather bare and inconvenient within. It contained only four rooms and an attic.

PALEOBOTANY

Seed-Like Objects 300,000,000 Years Old

WHAT may be the oldest known seeds in the world were described before the meeting of the Botanical Society of America by Dr. Chester A. Arnold of the University of Michigan. They are small, round, petrified objects that have all the appearance of seeds, and they were found close to the fossils of an extinct plant known as *Archaeopteris*, or "most ancient fern," in a rock stratum belonging to the Upper Devonian period. This geologic subdivision of time was roughly 300,000,000 years ago.

It has always been suspected that this plant, in spite of its fern-like leaves, was really a seed-bearer. Dr. Arnold has produced the strongest bit of evidence yet available in favor of this interpretation.

Science News Letter, February 2, 1935

The leaf fish of the Amazon very much resembles a floating mottled leaf.

A giant cactus of the Southwestern desert may live for several years on the water stored in its thick stem.

ARCHAEOLOGY

Museum Enterprise Remembers Antiquity's "Forgotten Men"

Small Cardboard and Wood Houses to be Used in Schools Demonstrate Living Conditions in Ancient Times

MODEL houses—not the real estate man's variety, but models on a miniature, doll house scale—are the clever idea of one big museum to teach young people what good homes were like in ancient Egypt and in medieval France.

The University Museum in Philadelphia reasons that archaeologists give the public a clearer notion of how kings lived and how people were buried in ancient times, than of everyday living habits.

Hence, the model cardboard and wood houses. The museum is publishing and selling the carefully scaled houses in knock-down form for school classes to paint and assemble.

Ancient Egypt lived more comfortably than medieval France, it appears.

The Egyptian house chosen for reproduction, explains the architect of the models, George B. Roberts, is an official's home excavated at El-Amarna. This home had 17 rooms and halls. Its flat roof was a pleasant outdoor living room, shaded by awnings or arbors. Cooking was done in a separate nearby building.

Egyptian Bathrooms

Near the master's bedroom were elaborate bath and toilet rooms. To insure ventilation while he slept, there was an opening in the roof over his bed, much like ventilators used on ships.

In contrast, is the medieval French house of a cloth draper of Rouen, superficially more like modern homes to look at, yet far less modern in its conveniences. This house has just four rooms and an attic, the whole building high and narrow, as if to take as little space as possible inside the crowded, walled town.

The fifteenth century furniture is not unlike many modern pieces. But chairs and benches are bare of upholstery. And the absence of wardrobes, hanging closets, and drawers in chests and tables would dismay a modern housewife.

"The shop on the ground floor," says

Mr. Roberts, "is typical of the age before the Industrial Revolution when trade and manufacture were always carried on at home."

Eventually, the museum hopes to show what city homes have been like in all civilizations that the world has known—not life in the palaces, nor yet in hovels,—but in the "better homes."

Science News Letter, February 2, 1935

PHYSICS

X-Ray "Bounce-Back" Tells Secrets of Crystals

A SIMPLIFIED and speedy method of studying atom layers in metal crystals, expected to cut markedly the time necessary for crystal structure studies in metallurgy, has been developed by Alden B. Greninger of Harvard University.

The new method is a variation of the classical scheme of the German scientist Max Laue for "fingerprinting" atoms in a crystal by making the atoms diffract X-rays and having them fall on photographic plates in characteristic patterns.

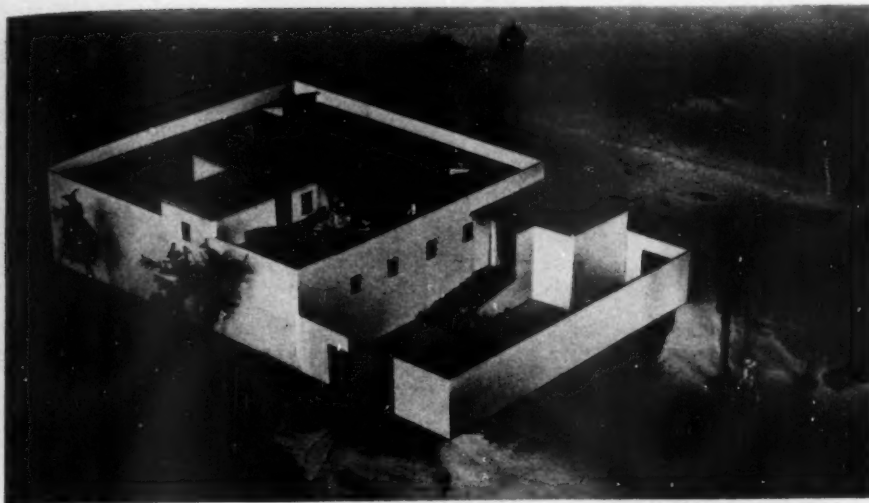
Such knowledge is vital for studies of metal weakness and, hence, is intimately bound up with problems of strength in such things as railroad rails, armor and boiler plate, and metal automobile chassis frames.

Instead of making X-rays pass through the crystal, which had to be cut in fairly thin sections in the former Laue method, Mr. Greninger cuts a hole in the photographic plate, passes X-rays through it, lets them fall on the surface of the crystal being studied and finally catches them on the plate as they are diffracted backward.

From the characteristic pattern thus obtained the arrangement of atom layers in the crystal can be calculated with relative simplicity.

Science News Letter, February 2, 1935

The seventeenth layer of the oil fields of Baku, supposed to contain only gas, recently yielded an oil gusher.



HOME COMFORTS IN ANCIENT EGYPT

Spacious, well-planned, with plenty of rooms, this house of an Egyptian official of 3300 years ago had bathrooms and other modern conveniences.

BOTANY

Tree-Ring Evidence Sure as Fingerprints

CHARACTERISTIC as fingerprints, and as impossible to duplicate, are the tree-ring markings on which the State of New Jersey has placed much dependence in its effort to prove that essential parts of the fatal Lindbergh ladder were made of a piece of lumber taken from the attic in Bruno Richard Hauptmann's house. If the tree-rings match point for point in the cut ends of two pieces of wood there can be but one conclusion: the two pieces of wood were originally one piece.

Duplicating details of tree-rings can belong only to one piece of wood, and only to one place in that one piece, because tree rings record the whole life story of the tree. Each spring, when water is plentiful in the soil, the living cells beneath the tree's bark lay down a layer of large tubes (large in a microscopic sense, at least) to carry the rising sap. Each summer, when water becomes scarcer, or for other reasons the tree slows down its growth rate, a layer of smaller tubes is formed. The next spring's sudden beginning of a new cycle lays down another layer of large tubes appear as "grain"; their cut ends making a sharp contrast.

When the tree trunk is turned into finished lumber, the sides of these alternating bands of large and small sap

tubes appear as "grain"; their cut ends as "rings."

No tree ever produces a set of rings exactly like those of another tree, not even its nearest neighbor of the same species. There will be tiny differences in width here and there, according to the depth of the mass of tubes laid down in response to slight variations in water supply or other life-experiences of the tree. It is these slight variations in width and shape of rings that makes them as sure as means of identification of the particular piece of wood as are the ridges and grooves on the finger-ends of a man.

But the unique identity of each tree-ring group goes further than that. Just as the arrangement of pores, tiny hairs and other microscopic details among the ridges and grooves of a fingertip belong to exactly that ridge on that fingertip and to no other, so the minute pore-pattern on the end of a piece of wood belongs to just that spot on that ring and cannot be reproduced anywhere else in the universe. This is partly because the sap tubes in a tree are not evenly round like water-pipes, but crowded by the pressure of their neighbors into a somewhat irregular honeycomb pattern, which never repeats itself.

Thus it becomes possible to match

not only wood rings or parts of rings, but within any given ring to count numbers and compare shapes on the cut ends of the crowded sap tubes. An identification of a piece of wood reached by these means is as certain as anything that was ever done with human fingerprints.

Science News Letter, February 2, 1935

ANIMAL HUSBANDRY

Soviets Start Chain of Arctic Reindeer Ranches

SOVIET authorities have taken steps to get more use out of the vast reaches of treeless tundra that slopes to the Arctic, across the whole of Eurasia, from the White Sea to Bering Straits and beyond to Kamchatka. Seventeen reindeer breeding ranches have been established, with a total of 167,000 head of stock.

Among the students at these ranch schools, there are many members of the hitherto backward northern peoples, including Evenkes or Tungus, Nentzi and Komi.

Science News Letter, February 2, 1935

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AGRICULTURE

Soil Erosion Shown As Manifold Menace

SOIL erosion by running water works mischief far beyond visible effect in gullying and wasting good farm, grazing and forest lands, bad though that is in itself. Some of these less obvious harms of erosion were pointed out by Dr. W. C. Lowdermilk, vice-director of the U. S. Soil Erosion Service, in the course of an address before the recent memorial meeting at Iowa State College, Ames, Iowa.

Soil erosion not only takes good soil away from where it is wanted, but frequently dumps it where it does millions of dollars' worth of damage. As an example, Dr. Lowdermilk pointed out the case of the rapid silting up of the irrigation reservoir at Elephant Butte, in New Mexico.

When the Elephant Butte dam was constructed, a survey made on the basis of the inflowing water's silt content indicated that the reservoir would not be silted up to the point of uselessness in less than 233 years. Surveys since then indicate that its life has been shortened, by silt from eroded lands, to 110 years. Even more disquieting, said Dr. Lowdermilk, is the fact that in about 60 years the capacity of the reservoir will be only that required for one season's use, leaving nothing in reserve for years of short rainfall and high water requirement.

Corking the Reserves

Another invisible damage wrought by erosion is the "corking" of underground reserves of water. These have been very heavily drawn upon by heavy pumpage during recent years, the speaker stated, and they are very much in need of replenishment by the downward movement of surface water. But when the water bears too heavy a burden of erosional mud, the "spreading grounds" become sealed up, and the water, no longer able to sink, flows off uselessly to the ocean.

Dr. Lowdermilk proposed, as a part of the answer to the deadly challenge of erosion, that the national readjustment of agriculture aim at the maximum possible use of good level lands, and that hilly lands be withheld from plowing until we can afford to work

their sides over into great stair-steps of level terraces, as the Incas of the Andean highlands did with their mountainsides.

Fertilizing and liming soil pays not only in increased crop yields but indirectly in decreased losses of top soil due to erosion. This point was stressed in an address by R. E. Uhland, of the U. S. Soil Erosion service.

Comparative Runoffs

Mr. Uhland told of experiments conducted under his direction at a soil erosion station near Bethany, Mo. Here strips of sloping soil are planted in various crops, with and without fertilizer, and the losses in runoff water and eroded top soil are kept accurately checked. Unfertilized land under corn lost soil 300 times as fast as did the comparison strip under the much closer-growing alfalfa, and had nine times more loss in runoff water.

The use of fertilizer greatly increased the contrast between "close" crops like alfalfa and grass and "open," vegetation-free soil. From areas cropped under a three-year rotation of corn, wheat, clover and timothy the loss of soil where neither fertilizer nor lime was used was at the rate of little less than 12 tons per acre, as compared with only 3.74 tons per acre, where lime and fertilizer were applied and the same rotation used.

Salvation of the soil from destruction by water erosion is wrought by the meekest of plants as well as by conquering grasses and towering forests of trees. Mosses, the Cinderellas of the plant world, play their disregarded but none the less effectual part in balking the "soft insatiable tooth" of soil-stealing water. Prof. Henry S. Conard of Grinnell College reported on the various ways in which these seemingly insignificant plants operate in checking surface soil losses.

Obviously, mosses are not equipped to check the heavier, undercutting types of erosion, as do the massive-rooted trees and other larger plants. Their hold in the soil is not deep enough for that. But mosses can and do work powerfully against the surface waste known

as sheet erosion. This is the even washing away of the top layer of soil, that comes before runnels and small streams start cutting deeper. Mosses accomplish this in several ways, Prof. Conard said.

For one thing, a dried mat of moss can soak up water like a wick. In several experiments performed in his laboratory, bunches of dried moss absorbed from two to over five times their own weight in water before they were wet enough to let any flow away. This would mean that in the field a dried moss sod would catch and hold all the drops from a shower for an appreciable time before even the smallest flowing trickle could start.

Even when water is flowing over the ground surface, if it encounters a bed of moss it is immediately slowed down. Furthermore, if it is carrying a load of silt which it has stolen from the soil, the moss takes it away again. Prof. Conard reminded his hearers of the crystal clearness of water that drips from wet clumps of moss, and pointed out instances where piled-up borders of sphagnum moss form the only confining barriers that hold in check accumulated masses of black muck in bogs. He also described places where sods of moss formed the only, but adequate, protection against gullying on steep banks.

Science News Letter, February 2, 1935

ENGINEERING

Soviets Plan Establishment To Capture Power From Sun

SCIENTISTS and engineers of Soviet Russia are rushing experiments in which the heat of solar radiation may be turned into usable power on earth. In keeping with its program to duplicate the work of Western civilization in every form of technology Russia is now tackling the century-old problem of how to run steam engines by the energy from the sun.

At the Helio-Technical Institute of Samarkaland (Central Asia) a solar air heater is in operation. It dries vegetables and fruit in a few hours where older methods required days.

At Tashkent, also in Central Asia, in what used to be Turkestan, research for several years has been progressing on solar energy plants. A kitchen is being operated. Food is cooked, water boiled and water pumped up to a small water tank.

So hopeful are Soviet engineers of solar energy that a power plant of 30,000 kilowatts capacity is to be

erected either on the shores of the Aral Sea or on the bank of one of its tributaries, the Amu-Daria River.

The latest design of pump to be used in this plant calls for movement of 4,000 cubic meters in 10 hours. Converting cubic meters into gallons of water yields the rather astonishing result of over a million gallons pumped in less than half a day.

Likewise astounding is the amount of energy in sunlight. Each year the energy falling on the earth is 1,000 times as much as that obtainable from all the coal, oil and water power used in the United States yearly if it were all available for power transformation.

But as in all forms of energy conversion, there is the question of efficiency in obtaining power from sunlight. One of the best methods, that of Willsie and Boyle in the early years of the present century, was not more than one or two per cent. efficient.

Science News Letter, February 2, 1935

BIOPHYSICS

Ultraviolet Rays Fatal To Eggs of Parasites

ULTRAVIOLET rays, at appropriate wavelengths and strength of dose, are fatal to the eggs of certain parasitic worms. The total energy of the light applied was equivalent to that of 12 days of average July sunlight, though the actual raying usually occupied only a few hours.

Previous observers of the killing effects of sunlight on these eggs had ascribed them simply to heating and drying out. But the present experimenters, W. H. Wright of the U. S. Department of Agriculture and Dr E. D. McAlister of the Smithsonian Institution, feel that they have demonstrated a direct lethal effect due to the ultraviolet radiation itself.

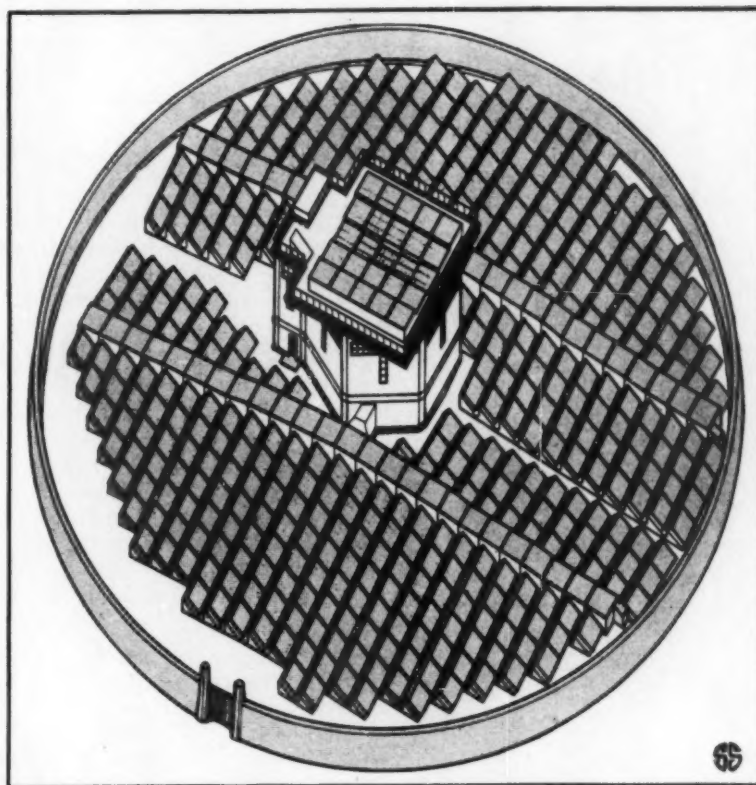
Science News Letter, February 2, 1935

● RADIO

Tuesday, February 5, 4:30 p. m.
WHEN THE PAST BROKE ITS SILENCE, by Prof. E. A. Speiser, Department of Semitics, University of Pennsylvania.

Tuesday, February 12, 4:30 p. m.
THE MARCH OF THE MICROBES, by Homer N. Calver, Public Health Consultant, New York City.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.



SOVIET HOUSE OF THE SUN

Design for a new solar energy station at Tashkent, capital of the Uzbek Republic of Central Asia, U. S. S. R. At this city Soviet scientists for several years have been operating a kitchen, bath and watertower on power supplied by the sun.

MEDICINE

Warns of Danger in New Reducing Drug

DANGER may lie in wait for the person who tries to reduce by means of a simple method widely publicized during the last eighteen months.

Warning to doctors, press and public against the indiscriminate use of this drug, called alpha-dinitrophenol, is issued by the *Journal of the American Medical Association* (Dec. 21) in an editorial.

Three persons have died and many others are experiencing ill effects from the use of the new method of reducing.

Some 100,000 persons in the United States have been treated with this drug in the past year, it is estimated, in the belief that here at last was a method of reducing excess weight which was free from serious after-effects. The drug burns the extra body fat and carbohydrate without affecting the protein, the medical journal says. However, reports of its toxic effects have already persuaded many doctors to stop its use until

the results of further studies are known.

Skin rashes are among the unpleasant and sometimes alarming after-effects of the use of the drug. It seems to have no bad effect on the liver or on the circulation, but investigators believe it needs careful watching as to possible injury to the red blood cells.

The drug can be purchased at any corner pharmacy, and the medical journal regrets the fact that no restrictions have been placed upon its sale. One of the big points in its favor when the use of the drug as a reducing method was first announced was the ease of its administration. The fat man or woman merely swallowed three capsules a day and within three months or so normal weight was achieved.

The editor of the medical journal urges that the sale of alpha-dinitrophenol be restricted to that ordered by doctors' prescription and that its use by medical men be carefully supervised. Probably it should be used by the physician, the Journal states, only when reduction of weight is important for health and when ordinary dietary methods have failed.

Science News Letter, February 2, 1935



Never Sees Shadow

WANT a sure-thing bet? Then lay any odds you like that the groundhog will not see his shadow. It's better than a thousand-to-one shot that he won't.

Mr. Groundhog is always too busy "pounding his ear" to pay any attention to sun or shadow on February 2, or on any other day thereafter until the snow is well gone and the earth warmed up enough to grow him some early greens to eat.

For the groundhog, or woodchuck as he is also called, takes his long winter nap until about the first week in March, over most of the country. Even down South, his earliest recorded appearance is February 7—a few days too late for Groundhog Day.

Of course, the groundhog never asked for the weather-man's job anyway, so it is small wonder he is not much of a success at it. The sun may shine in your neighborhood on the second of February, but a few scores or hundreds of miles away it is pretty sure to be cloudy. Since the seasons roll along pretty uniformly over the whole country, it is plainly impossible to predict their

staying or going by local conditions of a day. One could predict coming weather about as reliably by tossing a coin or rolling a pair of dice.

A final warning: there may be a groundhog kept in a warm house in the zoo. He's pretty sure to fudge on you,

staying awake all winter, and seeing his shadow every day—by electric light. Pay no attention to him. Such an effete animal, using such artificial means, can prophesy only what the weather will be like inside an electric refrigerator.

Science News Letter, February 2, 1935

METEOROLOGY

Weather Summary Shows How Bad Drought Year Was

JUST how bad the Great Drought of 1934 was, has been made the subject of a study of scientists of the U. S. Weather Bureau during the first fortnight of 1935, and is summarized by J. B. Kincer, chief of the division of climate and crop weather. (*Weekly Weather and Crop Bulletin*, Jan. 15.)

All sections of the country, except along the Atlantic coast, the east Gulf area, and the Pacific Northwest had below normal rainfall and much of the country had either the lowest of record or the total for the year approximated the previous low, Mr. Kincer states. Colorado, Indiana, North Dakota, Ohio, and South Dakota had the least annual rainfall of record, while Kansas, Montana, Nebraska, New Mexico, Utah, and Wyoming had only about one inch more than their previous low record. Thus approximately one-fourth of the States had in 1934 either the least precipitation of record or the annual totals approximated the previous low. Only one-third of the States had as much as normal.

Almost as important as the rainfall in producing unfavorable weather effects were the high temperatures, especially during the growing season, which made less effective the rain that did occur. It was an abnormally warm year

everywhere, except locally in the Northeast. A large northwestern area had the warmest year of record with some localities showing an accumulated excess of temperature as great as 2,000 degrees, or an average daily excess of nearly 6 degrees.

"The general soil-moisture situation obtaining at the close of the year was variable," Mr. Kincer continues. "Fall and early winter rains definitely relieved the drought situation everywhere east of the Great Plains, except in the eastern Ohio valley and locally in the Southeast. Also conditions at the beginning of 1935 are generally favorable from the Continental Divide westward to the Pacific Ocean, with the outlook unusually favorable in the north Pacific States."

"However, a large north-south area, extending in width from the Continental Divide eastward to the central Plains and in length from Canada southward to the Rio Grande, is still very dry with little or no improvement. At the same time in much of this area precipitation after the summer season is normally light and substantial relief naturally is not expected until the usual time for the spring rains to begin."

Science News Letter, February 2, 1935

METEORITICS

Iron Meteorite Found In South Dakota Field

AN IRON-nickel meteorite, measuring 16 inches in its greatest dimension and weighing 195 pounds 11 ounces, has come into the possession of the South Dakota School of Mines. (*Science*, Jan. 18.) It was found near the town of Norris, Bennett County, by a farmer. He was disking his field when the implement struck a hard obstruction, which on investigation proved to be a large meteorite.

Science News Letter, February 2, 1935

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History of Science

A HISTORY OF MAGIC AND EXPERIMENTAL SCIENCE, VOLS. III AND IV—Lynn Thorndike—*Columbia Univ. Press*, 2 v., \$10.00. (Not sold separately.) Elementary textbooks keep on blithely repeating the naive nineteenth-century dictum that in the Middle Ages "there wasn't any science." Meanwhile the labors of Lynn Thorndike pile up monumental evidence to the contrary. Medieval science looks queer to us now (what will ours look like half a millennium hence?); but the truths of today are bound to these buried ideas of yesterday, as a towering tree is bound to its buried roots. These two new books by Prof. Thorndike are very substantial blocks added to the pyramid on which he has been building for many years.

Science News Letter, February 2, 1935

Natural History

LOUISIANA OUT-OF-DOORS: A HANDBOOK AND GUIDE—Percy Viosca, Jr.—*Pub. by author*, 187 p., map, \$1.25. An astonishing amount of information about a most interesting state is packed into this pocket-size book: topographic and ecological divisions; brief descriptions of fish, fowl, and game animals; concise descriptions of towns and what the hunter and fisherman can expect to find in their neighborhood; and lots of pictures.

Science News Letter, February 2, 1935

Gardening—Bibliography

THE SOUTHERN GARDEN—William Lanier Hunt—*Univ. of North Carolina Press*, 57 p., 50c.; 25c. in North Carolina. Library Extension Publication, vol. 1, No. 1. A new publication that promises to help make Southern homes even more charming than they already are. Especially valuable for its workable bibliographies of readily accessible books and magazine articles on various phases of gardening and types of garden plants.

Science News Letter, February 2, 1935

History

FROM CANOE TO STEEL BARGE ON THE UPPER MISSISSIPPI—Mildred L. Hartsough—*Univ. of Minnesota Press*, 308 p., \$3.50. Boats are leading characters in this story of the development of Mississippi River country. Between canoes and steel barges came such landmarks of river history as Mackinac boats of the fur traders, keelboats that

did a big passenger business in early nineteenth century, and steamboats that ruled the river in the mid-century. Dr. Hartsough brings the account down to the present, with its questions regarding the river's future as an avenue of transportation.

Science News Letter, February 2, 1935

Ethnology

THE SACRED EDIFICES OF THE BATAK OF SUMATRA—Harley Harris Bartlett—*Univ. of Michigan Press*, 31 p., 31 pl., \$1.75. The temples, grave shrines, and grave houses that were formerly characteristic of the Batak region of Sumatra are described.

Science News Letter, February 2, 1935

Alchemy

ALCHEMY, CHILD OF GREEK PHILOSOPHY—Arthur John Hopkins—*Columbia University Press*, 262 p., \$3.50. Here is the history of alchemy in its many aspects which will be read with great interest by modern chemists interested in the origins of their science and by those who desire to know more about the many centuries dominated by alchemical ideas.

Science News Letter, February 2, 1935

Botany

FRUITS OF WOODY PLANTS—Eva L. Gordon—*New York State College of Agriculture*, 31 p., 10c. (Cornell Rural School Leaflet). A well-illustrated booklet, very useful in school nature study classes when green leaves and bright flowers are in close hiding.

Science News Letter, February 2, 1935

Cosmology

OUR PLANET THE EARTH, THEN AND NOW—Text, Lillian Rifkin; illustrations, Kurt Wiese—*Lothrop, Lee and Shepard*, 62 p., \$1.75. The concept underlying this book is excellent, and the illustrations bold and sweeping. It is therefore the more unfortunate that the text is too brief, and that there are a number of hardly permissible errors in the pictures.

Science News Letter, February 2, 1935

Economics

NATIONAL PLANNING BOARD FINAL REPORT, 1933-34—*Govt. Print. Off.*, 119 p., 25c. This report of the organization which evolved into the National Resources Board contains a section on the role of science in national planning prepared by the National Academy of Sciences' standing committee on government relations of which Dr. J. C. Merriam is chairman.

Science News Letter, February 2, 1935

Economics

MECHANIZATION IN INDUSTRY—Harry Jerome—*National Bureau of Economic Research, Inc.*, 484 p., \$3.50. Because of the hue and cry over the effect of the machine upon civilization this volume giving careful and detailed consideration to the problem is very timely.

Science News Letter, February 2, 1935

Economics

A PRIMER—COMMENT ON THE GREAT CONSTRUCTIVE WORK OF THE PRESIDENT OF THE UNITED STATES IN MAKING ARITHMETIC THE BASIC SCIENCE OF GOVERNMENT—Samuel Crowther—*Chemical Foundation*, 31 p., free. A plea with reference to the reciprocal tariff, for applying bookkeeping to the U. S. foreign trade and working out accounts not only as a whole but with individual nations. Comment on the foreign trade report of George N. Peek.

Science News Letter, February 2, 1935

Chemistry—Economics

IN THE MATTER OF A PROPOSED RECIPROCAL TRADE TREATY BETWEEN THE UNITED STATES AND SWITZERLAND. BRIEF SUBMITTED ON BEHALF OF CHEMISTRY IN THE UNITED STATES.—Francis P. Garvan—*Chemical Foundation*, 124 p., free.

Science News Letter, February 2, 1935

Politics

WHERE THE LEAGUE OF NATIONS STANDS TODAY—Quincy Wright—*University of Minn. Press*, 25 p., 25c. No. 9 of The Day and Hour Series of the University of Minnesota.

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